The Treatment of Retention of Urine from Prostatic Enlargement.

Being the Paper with which a Discussion on the Subject was opened at the Leeds Meeting of the British Medical Association, August, 1889.

By

A. F. McGill, F.R.C.S.,

Professor of Surgery in the Yorkshire College;

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THE TREATMENT OF RETENTION OF URINE FROM PROSTATIC ENLARGEMENT.

Mr. President and Gentlemen,

The treatment of Retention of Urine from Prostatic Enlargement is a somewhat large subject, and as the time allowed for this paper is strictly limited, it is necessary for me to make some selection in introducing this discussion. I purpose, therefore, to exclude all reference to the acute form of retention, and to confine my remarks to that chronic condition which prevents the bladder from thoroughly evacuating its contents, and thus eventuates in chronic retention. I am the more willing to adopt this course, as I know of nothing new to say about the treatment of acute cases. So far as my own experience goes, a catheter can always be passed into the bladder, and the patient temporarily relieved. If the relief is only temporary, the case falls into the class of which I am about to speak.

It will, I think, be convenient to lay before you certain propositions, to discuss them *seriatim*, to state my own opinions, and to leave you to object, to criticise, and to amend. My propositions are—

I.—That prostatic enlargements which give rise to urinary symptoms are intravesical, and not rectal.—It has been long recognised that the severity of the symptoms in a case of hypertrophy of the prostate bears little or no relation to its apparent size as felt through the rectum, and it is also well

known that a considerable number of men, aged fifty-five and upwards, have prostates of an abnormally large size, though of these only a certain proportion—say 50 %—suffer from urinary symptoms. This strange difference depends on the position at which the organ is enlarged. Prostates of immense size which project towards the rectum and perinæum cause no urinary trouble, while severe symptoms may supervene when the prostate on rectal examination is apparently of normal dimensions. The following case, which was in the Leeds Infirmary under the care of my friend, Mr. W. H. Brown, illustrates and proves the first statement. A man, aged 61, was admitted in May last suffering from symptoms of intestinal obstruction; he had suffered from chronic constipation for several months; for a month he had passed only small flattened fœces. For a week the obstruction had been complete, except that he had passed a little flatus. The abdomen was distended, and there was occasional vomiting. On rectal examination, a large prostate almost closing the lower aperture of the pelvis was felt, the obvious cause of the obstruction. Nevertheless he had had no trouble with his urine, and no symptoms pointing to enlarged prostate. On the other hand, the contrary condition existed in Case 6 of the table which you have before you. No enlargement of prostate could be felt on rectal examination, and yet on opening the bladder a pedunculated middle lobe was found which prevented the outflow of urine, and gave rise to the severe symptoms which characterized the case. In several other cases the prostate is described as slightly enlarged, the rectal examination giving no clue to the extent of the intravesical growth. In the twenty-four tabulated cases, there was one characteristic common to all—the enlarged prostate projected into the bladder. There are many varieties of the intravesical growth. We find (1) a projecting middle lobe—pedunculated or sessile, (2) a middle lobe with lateral lobes forming three distinct projections, (3) the lateral lobes alone, (4) a pedunculated growth springing from a lateral lobe, and (5) "a uniform circular projection surrounding the internal orifice of the urethra." This last variety, described by

Brodie, has in recent years escaped notice; it is better seen *in situ* than in museum specimens, and is of not unfrequent occurrence. It surrounds the urethra like a collar, and projects for a variable distance into the bladder.

II.—That retention is caused by a valve-like action of the intravesical prostate, the urethral orifice being closed more or less completely by the contraction of the bladder on its contents.—When the bladder contracts on its contents, the contained fluid is forced on to the projecting prostate, and the urethral orifice is closed. The mechanism is the same—with one exception—whatever may be the variety of the enlargement. Whether there is a middle lobe or lateral lobes, or a collar, the same valve-action occurs; and the more violent the contraction the more complete is the action of the valve. A patient finding that he is unable to relieve himself soon ceases his violent efforts, the pressure on the valve is then lessened, the urethral orifice is released, and the urine flows away in a feeble stream. If he attempt to expel it more quickly, the outflow again stops, and it is only after several attempts that he is able to obtain an incomplete relief. A time comes when, though the bladder still contains urine, no more can be forced from it. This residual urine varies much in quantity in different cases, sometimes amounting to a pint or more. Its presence, and the consequent frequency of micturition, is accounted for by the fact that a more violent contraction of the wall is required to completely, than to partially empty the bladder, and that its muscular coat acts to greater advantage, and consequently with greater force in its partially contracted, than in its distended condition. This greater force, pressing on the outside of the valve, more completely closes the urethra, and the urine that remains is unable to escape. An exception to the general rule is found in cases with a small sessile middle lobe, situated partly in the bladder, and partly occluding the prostatic urethra. When this is the case, the passage is blocked by the projection, and no valve action occurs. The urine is expelled by a violent contraction, and the bladder wall is much hypertrophied,

and its cavity contracted. Nos. 10 and 12 are instances of this condition. The explanation I have given of the mechanism of the residual urine is not that generally received, but want of time prevents me from discussing the various hypotheses that have been advanced.

III.—That in many cases self-catheterism is the only treatment required.—This proposition does not require discussion. We have all seen patients who with little discomfort have, by the passage of a catheter, kept themselves in good health, sometimes for years. We would none of us think under these circumstances of advising a patient to submit to a radical operation.

IV.—That when the catheter treatment fails, or is unavailable, more radical measures are necessary.—I am unable to prove the assertion, but my belief is that a large proportion of the cases treated by the catheter sooner or later break down—in other words, that eventually the prostatic enlargement is the cause of death. The breakdown may come soon, or it may come late, but in many cases it ultimately supervenes. The urine becomes thick and ammoniacal, the desire to micturate is continuous, the passage of a catheter relieves but for a few minutes, the suffering and discomfort is constant—day and night—life becomes a burden, and death a happy release. The greatest care cannot prevent this result, and the grossest carelessness does not always induce it. I have seen a patient who daily for years passed a gum-elastic catheter, which he carried in his hat, and which he never washed; the urine was acid, and he was in robust health. I have also seen many in the last stage of prostatic cystitis who had previously taken every care. Not only does catheter treatment fail, but it is not unfrequently—especially in hospital patients—unavailable. The patient has suffered from frequency of micturition and general discomfort for some years; he has probably consumed large quantities of herbs

to cure a supposed attack of "the gravel," and has not sought surgical assistance till from some cause or other complete retention has occurred. The surgeon passes a catheter with difficulty, there is much hemorrhage, the bladder is full of blood, and the patient's life is in jeopardy. If he gets over the acute attack, it is found that he cannot learn to catheterize himself. The constant attendance of a surgeon is impossible, and the catheter treatment cannot consequently be tried. Even in cases where there is apparently no difficulty, it is sometimes impossible to teach a patient to pass a catheter for himself. In these various cases—cases of frequent occurrence—it is plain that a radical operation is required. It is indeed absolutely necessary.

V.—That this treatment, to be effectual, should (1) for a time thoroughly drain the bladder, and (2) permanently remove the cause of the obstruction.—It is now some ten or twelve years since perinæal drainage was introduced for the relief of cystitis in patients suffering from prostatic breakdown. The relief obtained in this way has been most marked, and the practice is well recognised and established. As soon as efficient drainage is effected, the bladder ceases to be a receptacle, urine sweet from the kidneys flows through it, putrefactive changes are prevented, and acute symptoms cease. The relief is, however, only temporary. Either the patient must submit to the discomfort of permanently wearing a urinal, or the artificial fistula must be allowed to close, with the probable result of a recurrence of the symptoms. It is necessary, if we desire permanent relief, that our measures should be more radical. We have seen that the cause of the mischief is the intravesical prostatic outgrown, and this outgrowth must consequently be removed. This can only be done by leaving a raw surface in the prostatic region of the bladder, and as mischief would undoubtedly result from stagnant urine accumulating in this position, another and not less important reason for efficient drainage presents itself.

VI.—That these two indications are best fulfilled by a suprapubic rather than by a urethral or perinæal operation.—There are three ways in which it is possible to perform a radical operation for the removal of prostatic obstruction,—the urethral, the perinæal, and the suprapubic. Of these the urethral appears to be in every way unsatisfactory. It is founded on faulty anatomy; it is supposed that the cause of the retention of urine is a bar at the neck of the bladder, and that the division of this bar will effect relief. The table shews that out of twenty-four cases only five presented anything resembling a bar, and it is doubtful whether in any case either Mercier's or Bottini's operation could have been practised with a successful result. There are few, if any, cases recorded in which the operation has proved satisfactory; it fulfils neither of the indications which I have stated above to be necessary, and it is in my opinion unworthy of further trial.

We must next compare the perinæal with the suprapubic operation. I prefer the latter for the following reasons:

(1) It is more generally applicable. Dr. Watson, of Boston, U.S., whose valuable monograph on the subject I have had the advantage of reading, has expressed his opinion that the perinæal route is to be preferred. He believes it to be clinically safer, and his extensive post-mortem researches make him believe that two-thirds of all cases "could be successfully reached and incised, or partially or wholly removed by any one possessing an index finger which has a working length of three inches or more." Taking his own figures, it is unwise to commence an operation with the probability of failing in 30 % of the cases. In the other cases mere incision and partial removal of the intravesical growth will in my opinion, as a general rule, give a very unsatisfactory result. It is, moreover, not advisable to limit the ability to perform an operation to gentlemen with preternaturally long fingers. That the operation is sometimes practicable is shewn by a case published by Mr. Reginald Harrison; that it is not usually applicable is shewn by my own cases. In only three

of the twelve cases on which I have operated—viz., Cases, Nos. 2, 8, and 12—would it have been possible satisfactorily to remove the projecting portions of the prostate by the perinæal route.

(2) It can be performed with greater precision, and completed with greater certainty. It is, I believe, impossible to diagnose the nature of the intravesical growth till the finger is in the bladder; we may suspect an enlarged middle lobe, but we cannot be sure that it exists alone. In no way can a bladder be explored with the same completeness as through a suprapubic wound. All projecting portions can be felt with ease, but often are removed with difficulty—a difficulty that has made me certain that attempts at removal through the perinæum must often of necessity fail.

(3) It ensures complete and most efficient drainage. It may possibly be argued by some, that the position of the suprapubic wound will prevent drainage, and that the urine will naturally escape more readily through a dependant perinæal wound, than through one above the pubes. Experience shows that this is not so. Drainage takes place more easily through the soft abdominal than through the hard perinæal tissues. This was shewn in a case already published. In a patient with fractured pelvis and ruptured urethra, I opened the bladder above the pubes, and also cut into the infiltrated tissues in the perinæum. A tube was passed through the bladder from above and brought out below. On its removal all the urine escaped above, and continued to do so as long as the wound remained unhealed.

(4) It is equally safe. While making this assertion it is right to draw attention to the fact that it is merely an opinion and does not rest on a statistical foundation; there being no statistics available for the purpose. If, however, we examine our table we shall find that the mortality of the suprapubic operation has been lower than might reasonably be expected. All the patients were old men, with three exceptions above sixty, while seven were upwards of seventy. Almost all were in a bad state of general health, and many were obviously within a few

days or weeks of death, unless speedily relieved. Of my own cases, Nos. 2, 3, 7, 9, 12, 15, 18, and 22, would I believe undoubtedly if left alone have died in a short time. Among the twenty-four cases there have been four deaths (16·6 °/₀). Of these deaths one, No. 18, was due to shock; two, Nos. 15 and 17, to shock and hemorrhage; and one, No. 8, to retropubic suppuration. This last case is the only one in which the fatal result can be fairly attributed to the suprapubic incision. The presence or absence of a stone in the bladder, as well as the enlarged prostate, does not—as far as these statistics go—influence the mortality. There were among the lithotomy cases one death in seven, and among the pure prostatectomies three deaths in seventeen.

It is unnecessary to describe fully the operation of suprapubic prostatectomy, but a few special points about its technique, founded on an experience of thirty-seven suprapubic cystotomies of various kinds, may not be out of place.

(1) The quantity of water injected into the rectal bag, especially in cases where the prostate is abnormally hard, should be smaller than is usually recommended. In Case 12 there was profuse rectal hemorrhage, only stopped with considerable difficulty. In Case 18, there was considerable ecchymosis and abrasion of the mucous membrane of the rectum, and in another case of lithotomy hemorrhage occurred. Each case must be decided on its merits, but six or ten ounces is usually sufficient.

(2) The bladder should be irrigated till the antiseptic solution used is perfectly clear. The quantity left in the bladder varies much from ten to twenty or more ounces. The hand placed on the hypogastrium will show when the distension is sufficient.

(3) In cases where the bladder is contracted with thick non-distensible walls, it will usually be inadvisable to perform this operation.

(4) It is better to leave a catheter in the bladder till its cavity is opened, as it is a guide that expedites the operation. Care

must be taken not to hook the peritoneal fold (superior false ligament) into the wound with the point of the instrument.

(5) The linea alba is best divided by incising it immediately above the symphysis, and then dividing upwards on a director.

(6) Care must be taken to secure the bladder before proceeding to remove the prostate. This is best done by inserting two sutures through each lip of the wound, and fastening it securely to the deeper part of the abdominal wall. When the operation is completed, a third suture passed through the lower angle of the wound is an additional security against urinary extravasation into the retro-pubic space.

(7) The prostate should be removed as far as possible by enucleation with the finger, and not by cutting. The mucous membrane over the projecting portion having been snipped through, the rest of the operation is completed with finger and forceps. In this way excessive hemorrhage is prevented. A pedunculated middle lobe can, however, be removed by cutting through its base. Hemorrhage is best arrested by irrigation with water so hot as to make it unpleasant for the hand.

(8) A large tube should be inserted into the bladder, and the wound united above the tube, by a deep and superficial row of sutures. The tube is to be removed in forty-eight hours.

(9) The after treatment consists in keeping the parts clean, and washing the bladder and the wound—in exceptional cases—with a boracic solution.

Final results.—In ascertaining the final results in the patients operated on, it is right to exclude all the cases of lithotomy, as it might fairly be urged that any success that ensued was due to the removal of calculi, and not to removal of prostate. Our numbers are consequently considerably reduced. From the twenty-four cases tabulated we must deduct—seven cases of lithotomy; four deaths, three directly due to the operation, and one (Case 5) to pneumonia when the patient was convalescent; two cases who are still under treatment; and one who cannot be traced. This makes a total of fourteen cases,

leaving ten for whom we must account. Of these ten, eight have continued well, only one of them (No. 2) having required the passage of a catheter, and that only after excessive drinking. In one case (No. 12) the operation was, owing to the extreme hardness of the prostate, most unsatisfactorily completed; suprapubic drainage was accordingly adopted, but with little, if any, relief. In another case (No. 9) death occurred ten months after operation. He was relieved for a time, and then apparently relapsed. He was a patient whose general condition was extremely bad; after returning home his surroundings were of the worst possible description, and he became insane. I particularly draw attention to Cases 3, 4, 7, 16, 20, and 21, in all of whom the prostatic retention was of long standing, and in all of whom the bladder has, since the operation, been able to expel its contents. Sir Henry Thompson, who apparently has not performed—and at any rate has not published a case of—suprapubic prostatectomy, says, in his last edition of his *Diseases of the Urinary Organs*—"When it has been necessary "to practise habitual catheterism for retention from enlarged "prostate for two or more years, the coats of the bladder lose "their power, and are incapable, I believe, of regaining it in "any case after that lapse of time, and would fail to expel their "contents, even supposing the obstruction to be entirely "removed. There is good ground for concluding that no "operation would restore a *status quo* on account of our inability "to restore the expelling function of a bladder which has long "ceased to exercise it. It has been recently proposed to open "the bladder above the pubes for the purpose of removing "salient portions of the prostate in some cases; and what I "have just said in reference to advanced cases holds equally good "in relation to this procedure. No benefit can result to such." In all the cases enumerated above, marked prostatic symptoms had existed for years, and in one case (No. 7) self-catheterism had been practised several times daily for seven years. About

this last case Dr. Buck writes—"He has never used a catheter "since the operation (20 months ago); he can empty his bladder "perfectly, has no pain, and can sleep all night."* If the dictum quoted above were true, it would effectually stop all attempts at a radical cure of prostatic hypertrophy, it is therefore satisfactory to be able to demonstrate that it is a fallacy founded on a false hypothesis.

There are two other points which I wish to mention. It is usually stated that prostatic hypertrophy does not occur before the age of fifty-four. The table disproves this statement. In two cases (Nos. 1 and 17) the operation was done at the ages of fifty-three and fifty-four respectively, and in the last case, where no source of fallacy existed, the enlargement must have existed at or before the age of fifty.

One patient (Case 8) died of suppuration in the retro-pubic space, the so-called Cavum Retzii. He lived for nearly a month, and for the whole time was troubled with constant distressing hiccough. I have seen two other cases with suppuration in the same position following suprapubic cystotomy in which this symptom was present. I cannot explain the symptom, but think it probable that the suppuration and the symptom stand to one another in the relation of cause and effect. In a recent case after the removal of a large villous growth persistent hiccough supervened. I passed my finger into the wound behind the symphysis pubis, and found a large cavity coated with phosphates and full of stinking pus. Free irrigation with a very dilute solution of nitric acid soon cleaned the cavity, and as soon as this was done the hiccough stopped and the patient recovered.

Before I conclude, it is right that I should state that Dr. Belfield, of Chicago, is, so far as I know, the surgeon who first performed the operation which I have been discussing. He successfully removed a middle lobe of the prostate by the

* Since this was written I have examined case No. 3, and find he has no residual urine. His prostate symptoms had existed for at least six years.

suprapubic method in October, 1886. It was only when looking up material for this paper that I learnt the fact, or I should have given him credit for it in my former papers on the subject.

My cordial thanks are due to my colleagues on the staff of the Leeds Infirmary for placing their cases and their specimens at my disposal, and to Mr. Littlewood, our Resident Surgical Officer, for his assistance in preparing the table with which I have illustrated my remarks.

TABLE OF SUPRAPUBIC PROSTATECTOMIES

PERFORMED IN THE LEEDS GENERAL INFIRMARY TO JULY, 1889.

N.B.—The cases where Lithotomy was combined with Prostatectomy are printed in italics.

No.	Surgeon.	Name and Age.	Previous History.	Present Condition.	Date and Nature of Operation.	Subsequent History.	Final Result.
*1	*Mr. McGill*	*E. W., æt. 53*	*Symptoms five years. Hæmaturia; Incontinence, necessitating the wearing of a urinal. For seven months has not micturated without the aid of a catheter, and has had to pass a catheter every two hours, day and night.*	*General condition bad; calculus detected in bladder; urine, sp. gr. 10·14, acid, much mucus, trace of albumen; prostate through rectum appears slightly enlarged.*	1887, *March 24—Six calculi, weighing 174 grains, removed. Prostate surrounding the urethra like a collar, the size of a large walnut, removed.*	*Some urine passed by urethra on 18th day. Discharged 36th day, passing urine naturally.*	*Continued well till middle of 1888, when symptoms recommenced. In November the suprapubic wound opened during an attack of retention. On Dec. 17 the wound was re-opened, and a phosphatic concretion removed. The prostate had no intravesical enlargement. Made a speedy recovery and is now quite well.*
*2	Mr. McGill	T. T., æt. 65	Urinary symptoms for two years. No treatment till a fortnight ago, when the urine became offensive and retention almost complete.	General condition bad. Urine, sp. gr. 10·16, thick, ammoniacal, tinged with blood, a copious deposit of pus, and a little albumen. Prostate through rectum slightly enlarged.	1887, April 25.—Middle lobe of prostate, not pedunculated, the size of a bean, removed.	Urine passed by urethra on 14th day. Wound healed and natural micturition on 27th day.	Mr. Hebblethwaite, of Burley-in-Wharfedale, writes that T. is now a "hale and hearty man." He has no difficulty with his urine unless he drinks to excess. At Christmas, 1888, he had an attack of retention due to a drinking bout; since then has had several like attacks. He is easily relieved by the passage of a catheter.
*3	Mr. McGill	J. D., æt. 61	Symptoms six years. Three years ago complete retention. For some months urine has been putrid, and micturition or catheterism very frequent.	Is in a uræmic condition, with constant vomiting and diarrhœa. Urine strongly ammoniacal and putrid; sp. gr. 10·20, small quantity of albumen; deposits one-third of its bulk of pus. Prostate through rectum much enlarged.	1887, July 29.—Collar enlargement of prostate, the size of walnut, removed in small fragments. Ureters dilated, admitting the finger tip (the vesical mucous membrane being no doubt pushed before the finger).	Urine passed by urethra on ninth day. Sept. 10, left the hospital with wound closed and natural micturition.	Is now in very good health and has not required a catheter since the operation. Till four months ago micturition was normal, and urine clear; since then some turbidity of urine and increased frequency of micturition.
†4	Mr. Atkinson	T. R., æt. 66	For five years has had repeated attacks of retention, relieved by catheter. Catheterism always followed by bleeding.	Bladder distended above the umbilicus. Catheter passed with difficulty. Urine, acid, a dark chocolate colour, contains blood clots. Right side of prostate feels large on rectal examination. For eight days catheterism every four hours without benefit.	1887, October 28.—Growth the size of a cricket ball attached to right lobe enucleated in seven pieces; the largest piece an inch in diameter, the smallest the size of a bean.	Convalescence tedious, owing to emphysema and bronchitis. Left the hospital passing urine naturally on Jan. 14.	The patient writes, "I am glad to inform you that I have never felt anything of my old complaint since I was in Leeds, and have enjoyed good health, and to all appearance they have cured me."
†5	Mr. Atkinson	J. H., æt. 71	Symptoms for years; complete retention four days ago; catheter passed; urine clear. Since then attempts at catheterism have failed.	Bladder distended to umbilicus. Bloody urine removed by catheter. Prostate greatly enlarged on rectal examination. Hæmorrhage did not stop under treatment.	1887, Dec. 15.—Lateral lobes enlarged so as to measure two inches in their vertical diameter. From the left lobe a pedunculated nodule, the size of a marble, projected over the urethra. This was removed with scissors and the lateral masses were then enucleated with the finger. The portions removed weighed half an ounce.	On Jan. 14 the wound was entirely healed. He was getting up and passing urine naturally.	Death from pneumonia on Jan. 30. Post-mortem notes state: "The site of the operation (in the bladder) presented a perfectly normal appearance. There was nothing to suggest that any breach of surface had been made: no unhealed surface, no cicatricial contraction.
‡6	*Mr. Mayo-Robson*	*B. H., æt. 67*	*Urinary symptoms for many years; symptoms of stone for four years. Hæmaturia.*	*General condition bad. Is passing urine every half-hour during the day and night. Urine normal. No enlarged prostate to be felt per rectum.*	1887, *December 15.—Uric acid calculus weighing 322 grains removed. A projecting middle lobe of prostate removed by scissors and forceps.*	*First urine per urethram on ninth day. Wound entirely healed on January 31, when he was discharged well.*	*Not traced.*
7	Mr. McGill	J. D., æt. 62	Urinary symptoms and auto-catheterism for seven years. Acute cystitis and retention for three weeks.	Complete retention, relieved by a catheter. Urine ammoniacal, with copious purulent deposit.	1887, December 19.—Collar enlargement of prostate the size of a walnut removed. Subsequently a middle lobe which projected into the floor of the urethra, the size of a pea, removed.	Passed first urine per urethram and got up on 10th day. Discharged with wound healed and natural micturition on January 10.	Dr. Buck of Settle writes:—"He has never used the catheter since the operation; he can empty his bladder perfectly, has no pain, and can sleep all night. Urine healthy, quite free from mucus. Passes water three or four times daily, and would not know from his present symptoms that he ails anything."
8	Mr. McGill	J. L., æt. 67	Urinary symptoms four years. Auto-catheterism three and a half years. Vesical irritable, gradually increased till present time.	General condition fairly good. Has to pass a catheter ten times in twenty-four hours. Urine acid. Prostate through rectum slightly enlarged.	1888, January 16.—Middle lobe size of filbert removed. The bladder was much thickened and its cavity much contracted and non-distensible.	Much suppuration about wound, no healing, persistent hiccup. February 9, Abcess in front of left thigh opened. February 11, Died.	Death. *P.M.*, Granular kidneys, large abcess in in retro-pubic space. The bladder wall much thickened, and the prostatic wound perfectly healed.
9	Mr. McGill	M. P., æt. 73	Complete retention five years ago. Frequent attacks since in spite of auto-catheterism.	Admitted February 9, with complete retention. Is a very feeble old man. Coudé catheter passed with difficulty and required every three or four hours. Considerable hæmorrhage. Urine slightly albuminous. By rectal examination prostate much enlarged.	1888, February 14.—Both lateral lobes, much enlarged, were removed in seven pieces, weighing altogether two ozs. thirty grs., the largest piece was an elongated portion measuring two inches.	On eighth day passed urine per urethram and got up; on seventeenth day all the wound was healed, and all urine passed naturally, and on March 6th he went home.	Death in the workhouse on January 1, 1889. Had symptoms of cystitis for three or four months before his death. Became insane and tried to commit suicide.
10	Mr. McGill	T. M., æt. 69	Urinary symptoms for thirty years.	General condition good. Is passing urine 15—20 during twenty-four hours. Is troubled by libidinous feelings and is anxious to be operated on.	1888, May 14.—Prostate generally enlarged and very hard. A projecting middle lobe blocks up the urethra like a bar. A small piece the size of a pea removed with difficulty.	On eighth day got up; on twenty-second day some urine passed per urethram. Discharged June 28 with wound almost healed, but passing urine three times during the night.	Not traced.
‡11	*Mr. Mayo-Robson*	*J. B., æt. 63*	*Symptoms for eight years. Several attacks of complete retention, much hæmaturia.*	*Admitted with retention. Urine, sp. gr. 10·11, alkaline, no albumen. Calculi detected on sounding.*	1888, *June 7.—Fifty small calculi removed. A piece out of each lateral lobe removed by scissors and forceps.*	*Some cystitis after operation; irrigated with quinine and boracic acid lotion. Urine per urethram on July 6. August 6, wound healed. September 1, wound re-opened. October 6, discharged quite well.*	*The patient writes: "I am very well at present."*
12	Mr. McGill	W. S., æt. 72	Symptoms—increased frequency of micturition—for two years.	General condition bad; is passing urine thirty or forty times during the day, and ten or twelve times during the night.	1888, June 11.—Prostate very hard, with projecting middle lobe of small size; a piece size of small pea removed with difficulty.	January 12, passed some blood from rectum. January 16, passed large quantity of blood from rectum, which did not recur after plugging. July 11, wound closed, but symptoms not relieved. The wound was consequently re-opened and a permanent fistula made. He left relieved on October 13.	Is at present confined to his bed. He is provided with a suprapubic urinal of Mr. Buckstone Brown's pattern, but the "urine is so very thick that it will hardly pass the pipe." N.B.—The exceptional hardness of the prostatic tissue prevented the proper removal of the projecting portion of prostate. It is doubtful whether this case should be included in a table of prostatectomies.
13	*Mr. Jessop*	*J. F., æt. 63*	*Symptoms of calculus for twelve months.*	*Usual symptoms of calculus with much hæmaturia. Enlarged prostate felt through rectum.*	1888, *July 23.—Thirteen stones removed, each the size of a marble. An enlarged portion of the middle lobe of prostate removed piecemeal in small portions.*	*Urine per urethram on 14th day. Got up next day, and sent home well on September 11.*	*Dr. Proud writes that he continued well for three months, and that another calculus has now formed in the bladder.*
14	Mr. Mayo-Robson	C. D., æt. 62	Eight years ago an injury to the perinæum, since when increased frequency of micturition. Three years ago had to pass water twenty times during the night. The end of a catheter was broken into the bladder and removed by median perinæal incision. Relieved for a time. Recurrence of symptoms.	Admitted with complete retention and a greatly distended bladder.	1888, September 6.—Middle lobe the size of a walnut; lateral lobes also enlarged. Removed in six portions weighing more than half an ounce. Considerable hæmorrhage.	Intermittent hæmorrhage continued till September 25; wound healed on October 19. Some cystitis continued, causing increased frequency of micturition when he left the hospital on November 2.	Mr. Robson says that the condition continued to improve after he went home; that he has not required a catheter, but that he still suffers slightly from vesical catarrh.
15	Mr. McGill	W. B., æt. 64	Symptoms fourteen years; for last three years urgency of symptoms much increased; micturition seven or eight times during night. Complete retention relieved by catheter one year ago. No other treatment.	Admitted October 15, with retention and several false passages. Catheter passed with much difficulty; urine fetid. Retention continuing, the catheter was passed several times daily: no improvement, the general condition continuing very bad, dry tongue, high temperature, etc. Emphysema and bronchitis, with much cough and expectoration.	October 22, 1888.—Three portions of prostate removed, each the size of a bean, from lateral and middle lobes. Hæmorrhage considerable.	Died next day.	Death. At the post-mortem the kidneys were healthy. The bladder, much hypertrophied, contained 2 or 3 oz. of blood clot.
16	Mr. McGill	T. B., æt. 62	Symptoms four years. Auto-catheterism 15 months. For last three weeks extreme vesical irritability, necessitating frequent introduction of catheter.	Hale, healthy man.—9oz. residual urine, sp. gr. 10·20, acid, no albumen. Enlarged prostate felt through rectum.	1888, Nov. 13.—Enlarged middle lobe removed with scissors; size of filbert.	Bleeding from the bladder for four days; clots removed by irrigation. Urine per urethram on the 14th day. Wound healed and natural micturition on Dec. 22.	Dr. Roberts, Keighley, writes that he was attending T. B. for a small, painful abscess in the seat of the wound, which formed in May, 1889, and which is now almost healed. The urinary symptoms are entirely relieved.
17	Mr. Teale	J. S., æt. 54	Symptoms four years; passed blood three months ago; complete retention four days ago, which has persisted.	Admitted Nov. 22. General condition fairly good. Requires catheterism. The urine is intimately mixed with blood. General and local condition rapidly deteriorating.	1888, Nov. 22.—Two pieces of prostate, each the size of filbert, removed from lateral lobes by scissors and forceps. Considerable hæmorrhage.	Hæmorrhage continued till death, 18 hours after operation.	
18	*Mr. McGill*	*J. H., æt. 73*	*Symptoms ten years; worse for last nine months, during which time he has urinated every hour, day and night, and has had complete retention relieved by a catheter several times.*	*Admitted Dec. 8 with retention. The urine is so thick and bloody that it will hardly pass through the catheter. No stone detected with the catheter. General condition very bad.*	*Dec. 17.—Patient obviously dying if left alone. Bladder opened; two stones weighing 115 and 80 grains removed. Portion of prostate weighing 2oz. 40gr., which surrounded the urethra laterally and below was enucleated in one piece. Hæmorrhage trifling.*	*Died thirty hours after operation.*	*At the post-mortem examination, the left kidney was normal; in the right kidney there were many spots of commencing suppurative nephritis. The bladder walls were much thickened (specimen shown). There was considerable ecchymosis and abrasion of the mucous membrane of the rectum.*
19	*Mr. Jessop*	*J. R., æt. 73*	*Symptoms for seven years; worse for three years; often micturating two or three times in an hour.*	*Is passing urine five or six times in the hour day and night. Stone felt in bladder. No enlargement of prostate discovered on rectal examination. Urine, acid, sp. gr. 10·13; pus and a little albumen.*	1888, *December 17.—Uric acid stone the size of a walnut removed. The middle lobe which projected over the urethral orifice about the size of a nut was removed with forceps. The bladder was coated with phosphates.*	*The wound suppurated freely and became coated with phosphates. It was healed on March 2, when urine was passed naturally, though there was considerable vesical irritability.*	*No improvement since the operation.*
20	Mr. Jessop	E. H., æt. 68	Symptoms six years; much worse for last year. Cannot hold his urine for more than one and a half hours.	Catheter passed with difficulty and causes much pain. Under catheter treatment and getting rapidly weaker. Urine, sp. gr. 10·16, acid, a little albumen.	1888, December 26.—Middle lobe first removed with forceps, and the lateral lobes were enucleated with the finger.	Passed urine by urethra on ninth day. On January 26 wound healed and natural micturition.	Has continued quite well since the operation.
21	Mr. Atkinson	J. V., æt. 68	Has lately micturated 20 or 30 times during the night, and oftener during the day.	Admitted with complete retention; four pints of urine drawn off.	1889, Jan. 10.—Enlarged prostate removed with scissors.	Urine all passed by urethra on the 19th day. On Feb. 1, discharged, passing urine naturally.	Much relieved since operation; passes urine eight or nine times in 24 hours. There has been some inflammation round the wound, and at present there is a very small sinus leading down to the bladder.
22	Mr. McGill	S. K., æt. 75	Ordinary prostatic symptoms for five years; incontinence of urine for some months.	Admitted June 24 with retention. Is a very feeble old man. Catheter passed with difficulty. Urine contains a trace of albumen.	1889, June 26.—Two enlarged lateral lobes removed by enucleation. Each portion the size of a small walnut. Three sutures were inserted, fastening the bladder wall laterally and below to the abdominal wall.	Got up for two hours on the fourth day. Is progressing favourably.	
23	*Mr. Atkinson*	*— æt. 70*	*Five years ago eleven stones removed by Mr. Atkinson from the bladder by lateral lithotomy. For last year a recurrence of symptoms of stone and frequent nocturnal micturition.*	*General condition good. Calculus felt with sound. Urine, acid; sp. gr. 10·15; a little pus and a trace of albumen.*	1889, *July 4.—Two uric acid calculi, weighing 12 drachms each, and two pieces of prostate weighing 2 drachms removed. The prostatic enlargement was collar-like in shape and position.*	*Passed urine per urethram on ninth day. Doing well.*	
24	Mr. Atkinson	J. C., æt. 55	Lithotrity performed in October, 1888. Cystitis supervened, and the bladder was opened through the perinæum. In April, 1889, readmitted with alkaline, offensive urine, and on April 11, suprapubic lithotomy (5 stones) was performed. A small portion of prostate was removed at the same time.	He micturates 15 times nightly. The urine strongly alkaline and loaded with pus and phosphates.	1889, July 11.—The bladder opened and a collar enlargement of the prostate removed entire.	Is progressing favourably.	

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‡ Read at the Glasgow Meeting of the British Medical Association, 1888.

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